Reconsidering Usability and the Participatory Geoweb: The Challenges to Mapping Positive Experiences of Employment for Individuals with Intellectual Disabilities

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Abstract

Disturbingly low employment rates of individuals with intellectual disabilities (ID) are evident throughout Canada. This paper describes an ongoing (2013-2015) community-based participatory research (CBPR) project aimed at helping transform employment practices for individuals with ID in British Columbia through the design, implementation of the web-based and interactive BC Employment Mapping Tool (EMT). Information on the map is crowdsourced by a network of stakeholders (including self-advocates with ID, service providers and government) who already collaborate to address employment practices for individuals with ID. For members of the public, the EMT is a web-based mapping application that functions as an accessible and searchable database that documents best practices and positive experiences related to employment for people with ID; it embeds mainly multimedia information within map markers that are displayed on an interactive map. This is project driven by the principles of social justice and we aim to use the EMT to directly address issues of exclusion in the workplace. The paper will report on some early findings related to this project, in particular focusing on some of the initial challenges that we have faced in the design and development of the EMT. These challenges include: compensating for the diverse familiarity with using online interactive tools and social media, addressing varying levels of access to the computing tools required to contribute to the map, and questioning the variable level of spatial literacy and in particular the ability to read and understand the map, a central component of the EMT.

Background and Relevance

The Canadian national Participation and Activity Limitation Survey (STATS Canada, 2006) identified that 43.7% of people with disabilities were employed compared to 78.4% of persons who do not have disabilities. Despite efforts to develop labour market strategies for persons with disabilities at both the federal and provincial/territorial levels, employment for individuals with disabilities has remained consistently low over the past decade, and the employment situation for people with intellectual disabilities (ID) is even bleaker (CACL, 2006).

This statistic is striking given the importance of employment for many individuals with ID; work is an aspiration for many people and is a key mechanism for enacting social inclusion (Cramm et al., 2009; Jahoda et al., 2008; Hole et al., 2011). Furthermore, "participation in employment leads to numerous quality of life outcomes, including financial well-being, relationships, belonging, contribution, identity, meaning and health" (CLBC & Community Partners, 2013, p. 4). Research repeatedly demonstrates

that employment significantly enhances the quality of life for individuals with ID (e.g. Cramm et al., 2009; Eggleton et al., 1999; Flores et al., 2011; Hole et al., 2012; Schur 2002; West & Patton, 2010).

Because of the disturbingly low employment rates evident in British Columbia, stakeholders throughout the province are calling for action (see the Community Action Employment Plan March 11, 2013 and Ministry of Social Development, January 2012). There has been substantial activity in this area over the past two years; for example, in 2013 Inclusion BC launched its "Ready, Willing & Able" campaign targeting increased employment for individuals with ID in BC.

To reach these goals both members of the public and employers need to understand the breadth of stakeholder experiences related to this issue. In order for this to occur, innovative and pragmatic approaches to communicating, highlighting and mitigating issues of meaningful employment for individuals with ID present a very real need. The remainder of this paper will describe an ongoing (2013-2015) community-based participatory research (CBPR) (Cornwall & Jewekes, 1995) project aimed at helping transform employment practices for individuals with ID in BC through the design, implementation of the web-based and interactive BC Employment Mapping Tool (EMT). It will report on some very early findings related to this project, in particular focusing on three initial challenges that we have faced in the design and development of the EMT.

Developing the BC Employment Mapping Tool

The BC EMT has been co-designed with self-advocates[1] to support individuals with ID to document and share their experiences in the employment sector in BC. Holding true to the principles of CBPR, authentic collaboration between all project partners has been integral throughout each step of the project. We have drawn on an established network of stakeholders (including self-advocates, service providers and government) who collaborate throughout the province to address employment practices for people with ID. Researchers from UBC and the BC Centre for Employment Excellence[2] (CfEE) have built on these existing synergies and relationships to inform and design the implementation of a collaboration strategy in the development of the mapping tool. This has directly involved working with individuals and groups of self-advocates. We foresee that the EMT will be a resource for government, service providers, employers, individuals with ID, and family members to learn and to share examples of innovation in the area of employment. In addition, a core objective of this project is to explore the

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[1] The self-advocacy movement for individuals with ID seeks to overcome the isolation of people with disabilities and give them the tools and experience to take greater control over their own lives. A self-advocate is an individual with ID who is equipped to speak out for themselves, articulate their rights and capable of making decisions related to matters that affect their lives.
[2] The BC Centre for Employment Excellence (CfEE), a division of the Social Research and Demonstration Corporation (SRDC).

potential of scaling-up this project for applicability with other populations (e.g., youth, immigrants, Aboriginal populations). As such, the participatory development of the EMT represents an innovative approach to research, and knowledge exchange and knowledge translation in the area of employment practices in BC.

For members of the public, the EMT is a web-based application that functions as an accessible and searchable database that documents best practices and positive experiences related to employment for people with ID and embeds the data within map markers that are displayed on an interactive map. As such, the tool is designed to be of value to numerous stakeholders including (but not limited too) service providers, individuals with ID, family members, employers and policy makers. The data available allows users to search the database for examples of best practices classified by theme. These themes include 'My first job', 'Getting a job', 'Keeping a job', 'Training and supports', 'Transitions/changes in work', 'Benefits of work' and 'Getting to work'. The map markers contain themes as well as links to other information, which at this time are primarily video recordings of self-advocates sharing their employment-related experiences. In turn, these materials act as authentic examples and provide clear strategies of how to best support other individuals with ID across the province in preparing for employment as well as provide real-life examples of how employers can address barriers to support for individuals with ID. Specifically, the mapping functionality allows stakeholders to search geographic areas for information or other resources of relevance to employment for individuals with ID in their regions.

For self-advocates, relevant government bodies, service providers, employers with experience and for family members of individuals with ID, the BC Employment Mapping Tool is an interactive and dynamic medium to share their own experiences, policies and services related to the employment sector with members of the public. This in turn is designed to support them to reach out to others in similar situations, share their experiences, learn from one another and thus lay the seed for the continued strengthening of the network of stakeholders who collaborate throughout the province to address employment practices for people with ID.

In the creation of the EMT, researchers have utilized Geolive, a web-based participatory mapping platform. Geolive allows registered users to create and share their own spatially located information and experiences related to successful employment practices using a dynamic internet-based map interface. Geolive is developed in the Spatial Information for Community Engagement (SpICE) lab at the University of British Columbia Okanagan. Geolive was initially designed and developed to support the active participation of users in the contribution of location-based content. It has been programmed to be user-friendly to non-technical users, visually engaging and robust to use. Geolive enables registered users to drop information markers onto a map, turn different data layers on and off as well as take part in 'instant messenger' type discussions. Geolive supports user contributed markers; spatial discussions; interactive layers; variable access control (varying levels for different users); search functions; a timeline function to see how the spread and location of markers change overtime; and social media integration.

Rethinking the usability of the participatory geoweb

We have encountered a number of challenges related to the design and initial implementation of the EMT. These challenges have required us to rethink the development of a participatory geoweb mapping system that is both usable and robust for individuals with ID, as well as other stakeholders. The project has also required us to rethink our own assumptions around the potential application of Geoweb technologies with excluded populations. The remainder of this paper discusses just three of the usability challenges that have emerged during the course of this project.

As identified in an earlier section, there is a range of different intended users for the BC Employment Mapping Tool. These include self-advocates, individuals with ID, government, service providers, employers and family members. This range requires recognition that there is:
- diverse familiarity with using online interactive tools and especially social media,
- varying access to the computing tools required to contribute to the map, and
- a highly variable level of spatial literacy and in particular the ability to read and understand the map, a central component of the tool.

These points will be discussed in turn. However, before this discussion, it is important to note that the self-advocates and individuals with ID involved in our consultations were in some cases very tech savvy, engaging in social media activities such as Twitter and Facebook. That said, we anticipated potential usability challenges with the EMT but learned quickly that these were not unique to self-advocates: generational differences in familiarity with online technologies across participants (e.g., family members, service providers) also served as a challenge to adding information to the EMT.

Familiarity with online tools

In order to address the challenge related to the range of familiarity with using online interactive tools, we focused on creating an accessible and 'friendly' user graphical interface. The development of the interface involved working with focus groups comprised of self-advocates in participatory focus group settings to design icons and workflows for adding information to the map. It became apparent that assumptions around how we facilitated community users involved in past Geolive projects to add information needed to be rethought. Adding information to the EMT became a primary bottleneck to the success of the project. Complex, text focused input from self-advocates could not be expected, but nor could it be precluded. Yet at the same time we had to ensure that other user groups had the ability to add text intensive information. As a result we had to design a wizard to share information on the map in as straightforward a way as possible, but one where different users would add different types of information and in different ways. Specifically, for self-advocates, we developed a four-step wizard with icon driven input from the user. At no point was a user required to add text using their keyboard. Everything could be done by point and clicking with a mouse. This

interface also lent itself well to developing a mobile-friendly version of the tool, which we discuss in the next section.

Another important point to note in regards to familiarity with online tools relates to the existing use of social media applications (Facebook and Twitter in particular). A number of our self-advocate partners are active users of social media. We therefore had to develop a system that was not 'oppositional' to existing social media practice. Thus we created the ability for users to login using social media credentials and then to share, or repurpose, the information that they add to the EMT through their existing social media networks. Not only does this encourage users to share their information through the map (because they do not have to duplicate their efforts), but also it serves to direct more user traffic back to the EMT site.

Access to tools

During focus group meetings it became apparent that almost all self-advocate web activity was conducted using Android-based smart phones and (usually small sized) tablets. We recognized that if we did not purposefully design the EMT to have a mobile-friendly interface we would greatly limit its uptake and use by self-advocates. As a result we developed the tool to work on seamlessly across varying screen sizes (from a 4.5 inch smart phone screen to a full sized desktop computer monitor). As the site recognizes the hardware screen size it automatically adjusts icons, links, fonts and legends to match. In the future, we want to develop a partnering mobile app to work in conjunction with the Mapping Tool, however, we lack the resources to develop this in the short-term.

Spatial literacy

We are continuing to try to understand the challenge of spatial literacy[3] and map reading within the context of the success of the EMT project. Undoubtedly, the map is an important component of the 'friendly' interface and provides a mechanism to examine the relationship of 'place' to access to experiences and services available. Through initial evaluation a number of users have talked about the importance of the visual aspect of the map. Yet, we are concerned that we have built this on a number of assumptions that the map. These are, firstly that the map is both readable and understandable to users (self-advocates in particular), and secondly, that the map provides an important framework to structure the crowdsourced information in a way that makes it more meaningful, or at the very least more accessible. Our initial user testing has shown that self-advocate users are more drawn to the street view capability built into the EMT and less to the map itself. This remains an ongoing aspect of the research project.

Conclusions

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[3] Spatial literacy refers to the ability to both read and use maps. Furthermore it relates to the capacity "to visualize and interpret location, distance, direction, relationships, movement and change through space" (ESRI, 2014).

The project is still in the early stages. We have developed and are beginning to pilot a draft version of the EMT. At this stage we are targeting service providers (specifically employment and community living providers), employers, self-advocates and their families, as well as policy makers to learn and to share examples of innovation in the area of employment. In April 2015 we will open the EMT up to the public. We anticipate at that time that the results of this crowdsourced information will help inform and guide employment strategies, policies and practices to effect positive outcomes across numerous levels: provincially, regionally and, most importantly, employment service providers, potential employers, and for individuals with ID.

We are committed to the ongoing project development as well as the EMT's long-term management in the drive to support the vision for inclusive employment of individuals with a disability. We are also interested in exploring the potential of scaling-up this project with other excluded populations (e.g., youth, immigrants, Aboriginal populations). As such, the participatory development of the tool represents an innovative approach to research, knowledge exchange and knowledge translation in the area of employment practices in BC.

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